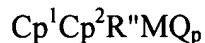


AMENDMENTS TO THE CLAIMS

Claims 1-21 (Cancelled)

22. (New) A olefin polymerization catalyst composition comprising a metallocene catalyst component characterized by the formula:



wherein:

(a) Cp^1 and Cp^2 are each independently a substituted or unsubstituted cyclopentadienyl derivative incorporating a cyclopentadienyl ring in the form of a substituted or unsubstituted cyclopentadienyl group, a substituted or unsubstituted indenyl group or a substituted or unsubstituted fluorenyl group wherein at least one of the cyclopentadienyl derivatives Cp^1 and Cp^2 incorporate a nitrogen (N) or phosphorus (P) atom in its cyclopentadienyl ring;

(b) R^n is a structural bridge between Cp^1 and Cp^2 imparting stereorigidity to the ligand structure provided that when Cp^1 incorporates a phosphorus atom in its cyclopentadienyl ring and Cp^2 is free of a phosphorus atom in its cyclopentadienyl ring, the bridge R^n is connected to the phosphorus atom in Cp^1 or to a carbon atom in Cp^1 which is distal to the phosphorus atom and further provided that when Cp^1 is a substituted or unsubstituted indenyl group and Cp^2 is a substituted or unsubstituted indolyl group, the bridge R^n is connected to the nitrogen atom of group Cp^2 or to a carbon atom which is vicinal to the nitrogen atom;

(c) M is a transition metal from Group IIIB, Group IVB, Group VB or Group VIB of the Periodic Table of Elements (CAS Version);

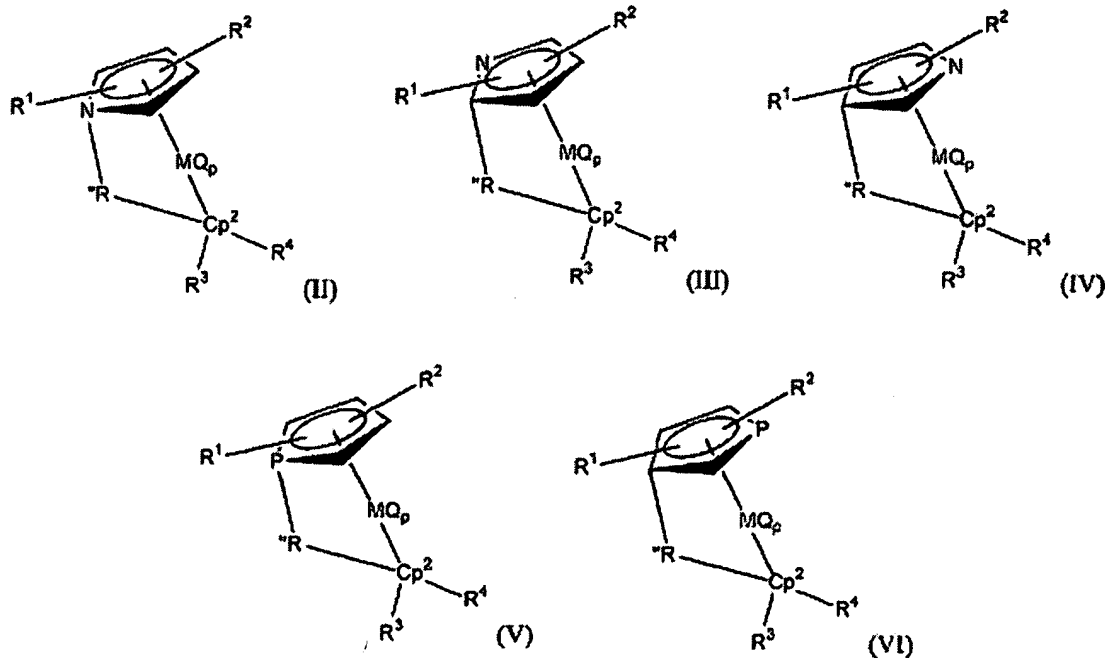
(d) Q is a halogen or a hydrocarbyl group having from 1-20 carbon atoms;
and

(e) p is equal to the valence of the transition metal M minus 2.

23. **(New)** The composition of claim 22 wherein one of Cp^1 or Cp^2 incorporates a nitrogen atom in its cyclopentadienyl ring, and R'' is attached to the nitrogen atom, to a carbon atom vicinal to the nitrogen atom, or to a carbon atom non-vicinal to the nitrogen atom.

24. **(New)** The composition of claim 22 in which Cp^1 and Cp^2 are each independently a substituted or unsubstituted cyclopentadienyl group, or a substituted or unsubstituted fluorenyl group.

25. **(New)** The composition of claim 22 wherein the catalyst component is characterized by one of the following formulas (II) – (VI):



wherein R^1 , R^2 , R^3 and R^4 may be the same or different and are selected from the group consisting of a halogen and $C_1 - C_{20}$ alkyl, aryl, cycloalkyl, alkoxy and silyl groups.

26. **(New)** The composition of claim 22 wherein Cp^1 is a substituted or unsubstituted cyclopentadienyl group and Cp^2 is a substituted or unsubstituted fluorenyl group.

27. **(New)** The composition of claim 22 wherein both Cp^1 and Cp^2 comprise indenyl groups.

28. **(New)** The composition of claim 22 wherein M is Ti, Zr, Hf, or V.

29. **(New)** The composition of claim 28 wherein p is 2.

30. **(New)** The composition of claim 29 wherein Q is Cl.

31. **(New)** The composition of claim 22 wherein R" is substituted or unsubstituted and is selected from the group consisting of an alkylene derivative having from 1-20 carbon atoms, a dialkyl germanium derivative, a dialkyl silicon derivative, a dialkyl siloxane derivative, an alkyl phosphine derivative and an amine derivative.

32. **(New)** The catalyst of claim 31 wherein R" comprises an Me_2Si derivative or an Et derivative.

33. **(New)** The catalyst of claim 22 wherein at least one of the Cp^1 and Cp^2 derivatives are substituted with substituents which are independently selected from the group consisting of aryl derivatives having from 1-20 carbon atoms, hydrocarbyl derivatives having from 1-20 carbon atoms, cycloalkyl derivatives, silane derivatives, alkoxy derivatives and halogens.

34. **(New)** The composition of claim 33 wherein said substituents are independently selected from the group consisting of Ph, Bz, Naph, Ind, BzInd, Me, Et, n-Pr, i-Pr, n-Bu, and Me₂Si.

35. **(New)** The composition of claim 34 wherein the substituents are methyl groups.

36. **(New)** The composition of claim 22 wherein the metallocene catalyst component is immobilized on a solid support.

37. **(New)** The composition of claim 22 further comprising an aluminum- or boron-containing co-catalyst capable of activating the catalyst component.

38. **(New)** The composition of claim 22 wherein Cp¹ incorporates a nitrogen or phosphorus atom and is a cyclopentadienyl group or an indenyl group which is substituted or unsubstituted and Cp² is a substituted or unsubstituted fluorenyl group.

39. **(New)** The composition of claim 38 wherein Cp¹ is a substituted or unsubstituted cyclopentadienyl group and Cp² is a fluorenyl group with at least one substituent at the 3- or 6-position, or at the 2- or 7-position.

40. **(New)** The composition of claim 39 wherein said fluorenyl group is disubstituted with substituents at the 3- and 6-positions or at the 2- and 7-positions.

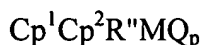
41. **(New)** The composition of claim 40 wherein said substituents are methyl groups.

42. **(New)** The composition of claim 22 wherein said catalyst component is selected from the group consisting of: Me₂Si(pyrrolyl)FluZrCl₂, Et(pyrrolyl)FluZrCl₂,

$\text{Me}_2\text{Si}(\text{Imidazolyl})\text{FluZrCl}_2$, $\text{Et}(\text{Imidazolyl})\text{FluZrCl}_2$, $\text{Me}_2\text{Si}(\text{phospholyl})\text{FluZrCl}_2$, and
 $\text{Et}(\text{phospholyl})\text{FluZrCl}_2$.

43. (New) A process for the polymerization of an ethylenically unsaturated monomer comprising:

- (a) providing a metallocene catalyst component characterized by the formula:



wherein:

(i) Cp^1 and Cp^2 are each independently a substituted or unsubstituted cyclopentadienyl derivative incorporating a cyclopentadienyl ring in the form of a substituted or unsubstituted cyclopentadienyl group, a substituted or unsubstituted indenyl group or a substituted or unsubstituted fluorenyl group wherein at least one of the cyclopentadienyl derivatives Cp^1 and Cp^2 incorporate a nitrogen (N) or phosphorus (P) atom in its cyclopentadienyl ring;

(ii) R'' is a structural bridge between Cp^1 and Cp^2 imparting stereorigidity to the ligand structure provided that when Cp^1 incorporates a phosphorus atom in its cyclopentadienyl ring and Cp^2 is free of a phosphorus atom in its cyclopentadienyl ring, the bridge R'' is connected to the phosphorus atom in Cp^1 or to a carbon atom in Cp^1 which is distal to the phosphorus atom and further provided that when Cp^1 is a substituted or unsubstituted indenyl group and Cp^2 is a substituted or unsubstituted indolyl group, the bridge R'' is connected to the nitrogen atom of group Cp^2 or to a carbon atom which is vicinal to the nitrogen atom;

(iii) M is a transition metal from Group IIIB, Group IVB, Group VB or Group VIB of the Periodic Table of Elements (CAS Version);

(iv) Q is a halogen or a hydrocarbyl group having from 1-20 carbon atoms; and

(v) p is equal to the valence of the transition metal M minus 2;

- (b) providing an activating co-catalyst component;
- (c) contacting said metallocene catalyst component and said activating co-catalyst component in a polymerization reaction zone with an ethylenically unsaturated monomer to produce a polymer product by the polymerization of said monomer; and
- (d) recovering said polymer product from said reaction zone.

44. **(New)** The method of claim 43 wherein said ethylenically unsaturated monomer is ethylene or propylene.

45. **(New)** The method of claim 44 wherein said monomer comprises propylene and said polymer product is a polypropylene homopolymer or copolymer.

46. **(New)** The method of claim 44 wherein said monomer comprises propylene and said polymer product is a stereoregular polypropylene comprising isotactic and syndiotactic polymer blocks.